of immunity attained. The results of experiments in vitro cannot be interpreted as denoting the state of the patient's resistance. (8) As it has been asserted by all authors that vaccination by living microorganisms is the most effective, and, moreover, this has been proved by the experiments on chimpanzees made by Metchnikoff and Besredka, and as Broughton-Alcock's observations on man have proved the innocuousness of the living sensibilized Bacillus typhosus, he presumes to conclude that this method ought by preference to be applied to man. Since the writing of this article 750 persons, including many soldiers, have been inoculated. The results are most satisfactory and encouraging.

**Hexamethylenamin in the Treatment of Systemic Infections, with a Special Emphasis upon its Use as a Prophylactic.**—CROWE (*Johns Hopkins Hospital Bull.*, 1912, xxiii, 255) says that the suggestion that hexamethylenamin be used in the treatment of systemic infections is based entirely upon the results of experimental and clinical observations. He believes that it is of value not only as a therapeutic, but especially as a prophylactic measure in a great variety of maladies. Among the conditions which may be favorably influenced by the administration of hexamethylenamin the following are the most important: (1) Infections of the genito-urinary tract and typhoid bacilluria; (2) infections of the bile-ducts and gall-bladder; (3) infections of the cerebrospinal system, poliomyelitis, epidemic meningitis, meningeal infections following injuries or infectious processes elsewhere in the body; (4) infections of the respiratory tract, including infections of the paranasal sinuses and ears, acute rhinitis, acute tonsillitis, and some forms of bronchitis. In lobar pneumonia and pulmonary tuberculosis it is doubtful whether this drug is of any value. Hexamethylenamin, given either by mouth or by rectum, makes its appearance in the bile and in the urine almost simultaneously. Provided large doses of hexamethylenamin are given, at least 75 grains a day, this drug appears in the gall-bladder in a concentration which suffices to render the bile an unsuitable media for the growth of bacteria. Since 1908 it has been a routine measure in the Johns Hopkins Hospital to administer hexamethylenamin in all cases in which a meningeal infection is a possible or threatened complication. There have been 20 cases of compound fracture of the vault, similar in that there was a laceration of the meninges and underlying cortex in each instance. In 8 of the earlier cases hexamethylenamin was not given, and the mortality from infection was 50 per cent. To each of the remaining 12 cases, hexamethylenamin was given immediately after the injury, and at frequent intervals, until all danger of infection was past. Ten of these patients recovered, while 2 succumbed with a pneumococcal meningitis. In 40 cases of hypophysis tumor operated upon, hexamethylenamin has been administered as a prophylactic measure. It was given in doses of from 40 to 60 grains during the twenty-four hours preceding the operation, and even larger amounts for several days after the operation. In 31 cases there were no postoperative complications whatever. In 9 cases there were symptoms suggesting a meningeal infection. Three of these patients finally succumbed to meningitis; the other 6 patients recovered. They have abandoned the custom of giving this drug in doses of 10 to 15 grains at stated intervals, since it is often difficult to induce the patient to take the 250 or 300 c.c. of water in which doses of this amount should always be dissolved. In very ill patients, the drug is usually administered by rectum, from 50 to 100 grains being dissolved in a liter of salt solution, and allowed to flow into the bowel a drop at a time. There has not been the slightest evidence of undue irritation of the intestinal mucosa, even after one or two weeks of almost continuous administration by this method. If the patient is able to take nourishment by mouth, from 2 to 3 grains of hexamethylenamin are added to every ounce of liquid, and it is often possible in this way to give from 60 to 100 grains a day without the patient's knowledge and without producing gastric or renal irritation. There have been but very few instances in which toxic symptoms have resulted from the administration of large doses of hexamethylenamin, although from 200 to 300 grains daily for four or five days were given; even in children, doses of 100 or 125 grains a day have produced no irritative symptoms. In 95 cases in which the average dose of hexamethylenamin was 75 grains a day for ten days, painful micturition and hematuria occurred in 7 instances. Three of these cases were fatal meningeal infections, and the drug was given in unusually large amounts with the hope of checking the progress of the disease. At the post mortem examination it was apparent that the hematuria had its origin from the mucous membrane of the bladder, and was not due to an acute renal irritation. In the remaining 4 cases the urine rapidly became normal on the withdrawal of the drug. Crowe says that in a few persons very susceptible to the drug, even a small dose may give rise to skin rashes, catarrh of the mucous membranes, gastric or urinary irritation. However, this fact does not invalidate the use of the drug. He believes that untoward symptoms usually arise as a result of insufficient dilution, and such symptoms have invariably disappeared on withdrawing the drug and producing active diuresis by forcing liquids.

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**The Crotalin Treatment of Epilepsy.**—SPANGLER (*New York Med. Jour.*, 1912, xcvi, 520) adds to previous communications on this same subject. Since first using the venom in the treatment of epilepsy (March, 1909), he has used it in 109 cases, and has given to these patients over 2000 injections of the venom without untoward effects. He gives a *resume* of the results in 6 of the 11 cases first reported that he has since kept under observation. Five of these patients have been free from convulsions for periods of from seventeen months to three years and three months. One patient who formerly had from two to five major convulsions each week now only has one attack every three or four months, and physically and mentally has made such improvement that he can work regularly at his employment. Crotalin solution is made from the dried, yellowish crystal-like scales of the evaporated venom of crotalus horridus, the rattlesnake. The venom is obtained from the living reptile and dried between glass plates, under a bell jar, in the sun. The crystals are dissolved in glycerin and sterile water, to which a few drops of tricresol are added as a preservative. The solution is standardized and given by hypodermic injection. Spangler